



Fritz Kahn (1888 – 1968)

BIOMECHANICS

Additional Information Lecture 2

7^ο εξάμηνο

Σχολή Μηχανολόγων Μηχανικών ΕΜΠ

Διδάσκων:

Michael Neidlin

Heart anatomy, cardiac cycle, Frank-Starling

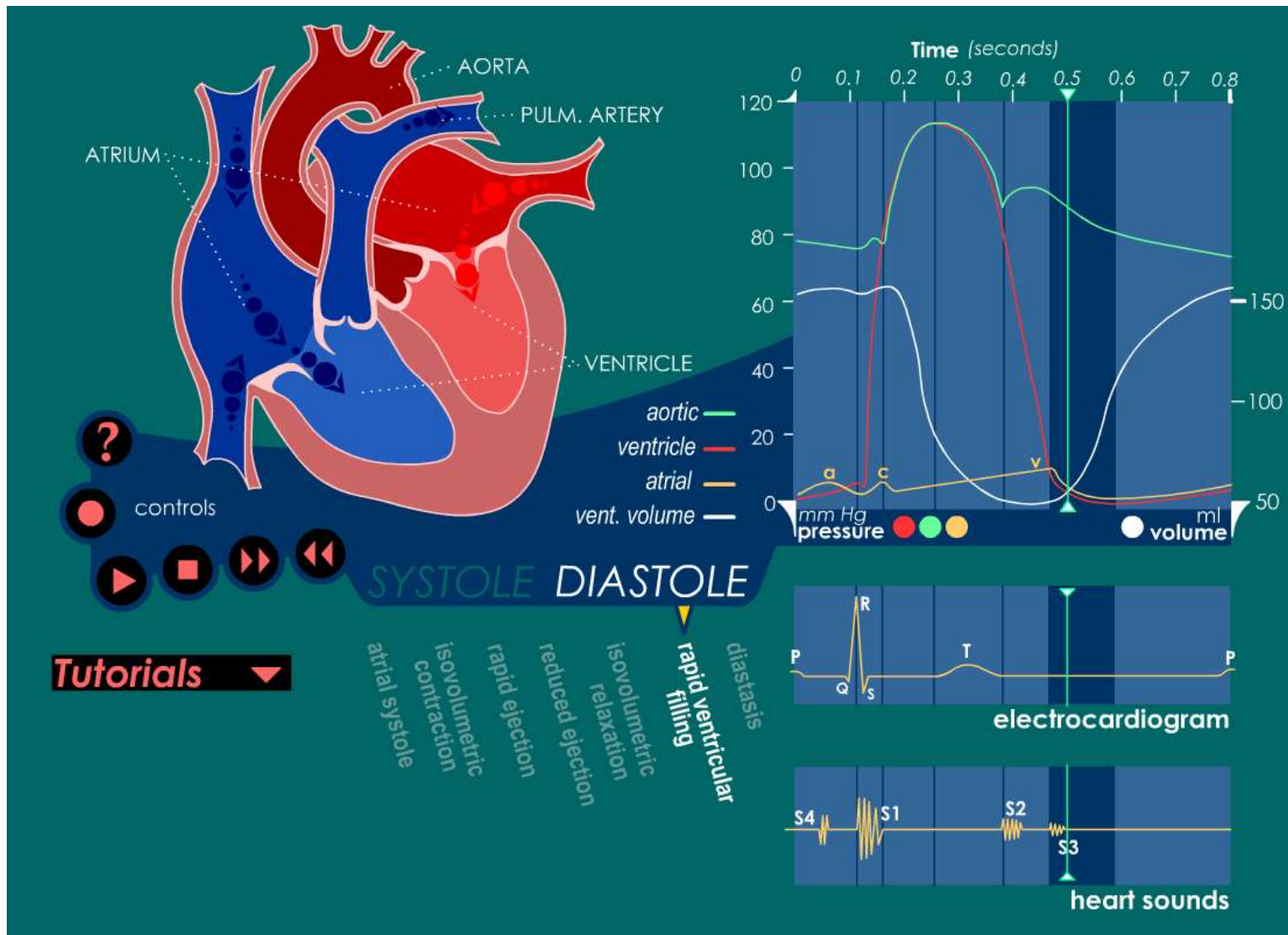
<http://www.cvphysiology.com/Heart%20Disease/HD001>

<http://www.cvphysiology.com/Cardiac%20Function/CF024>

<http://www.cvphysiology.com/Cardiac%20Function/CF003>

Interactive cardiac cycle

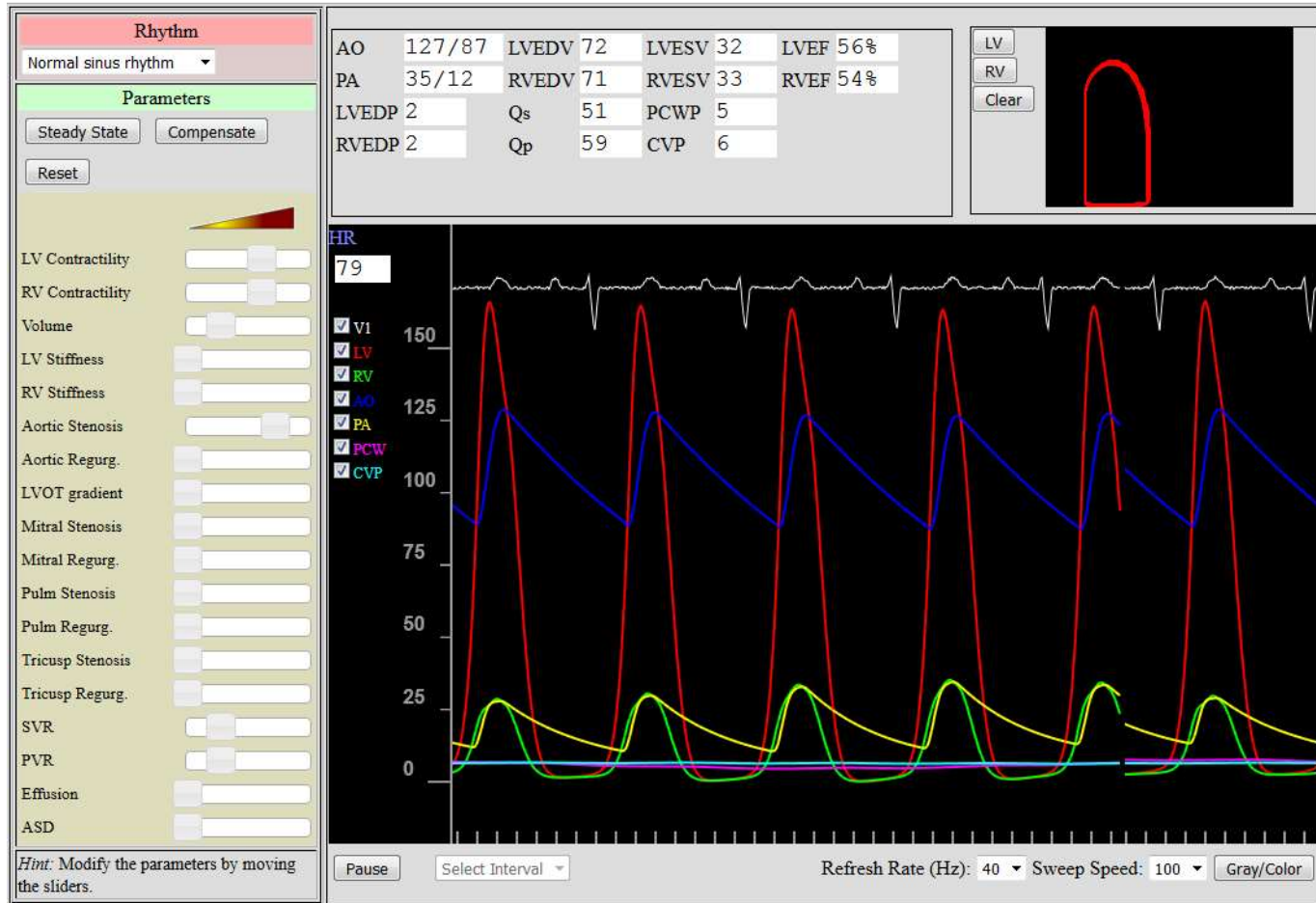
https://library.med.utah.edu/kw/pharm/hyper_heart1.html



Interactive PV Loop simulator

<http://svtsim.com/hemosim.html>

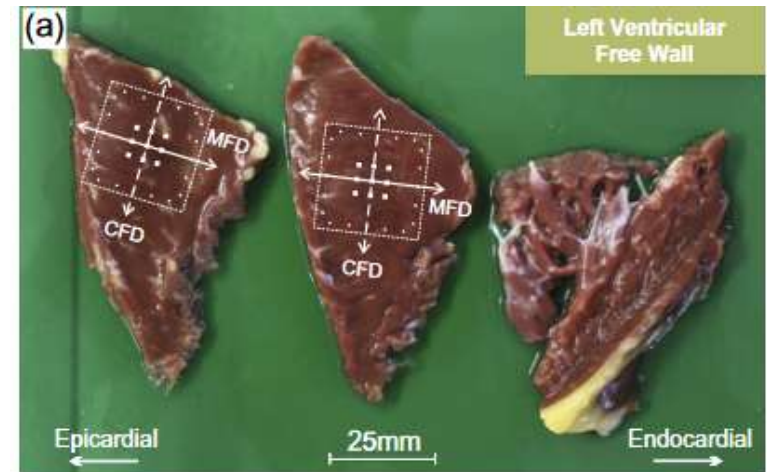
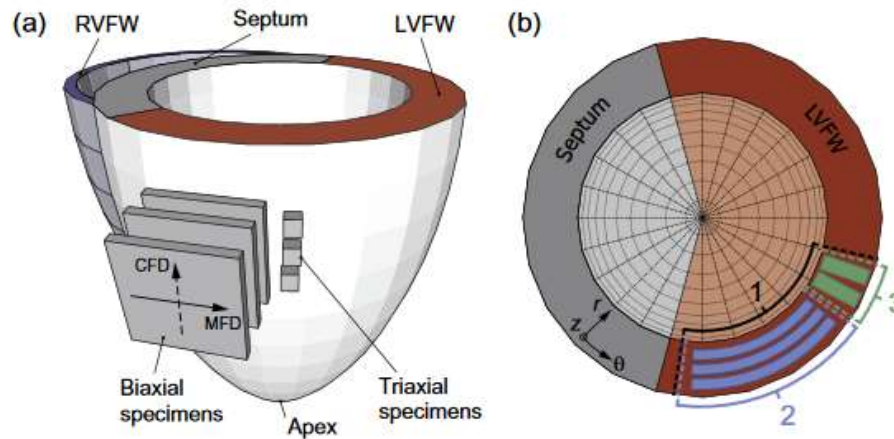
Cardiac Hemodynamic Simulator (HEMOSIM)



Myocard structure and mechanics

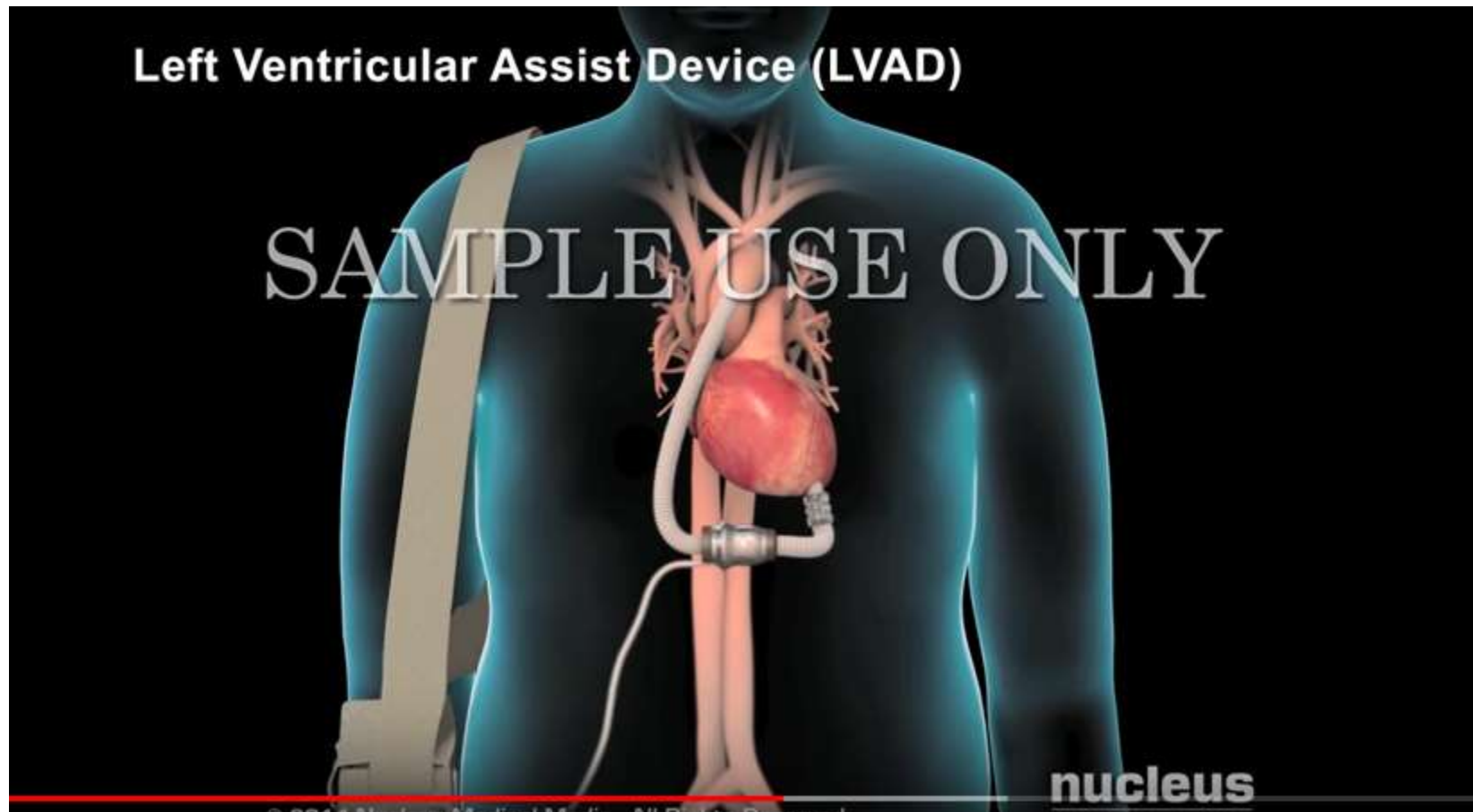
https://en.wikipedia.org/wiki/Cardiac_muscle

See Holzapfel2009.pdf and Sommer2015.pdf (this is rather long)



Sommer et al. 2015. Biomechanical properties and microstructure of human ventricular myocardium, *Acta Biomaterialia*

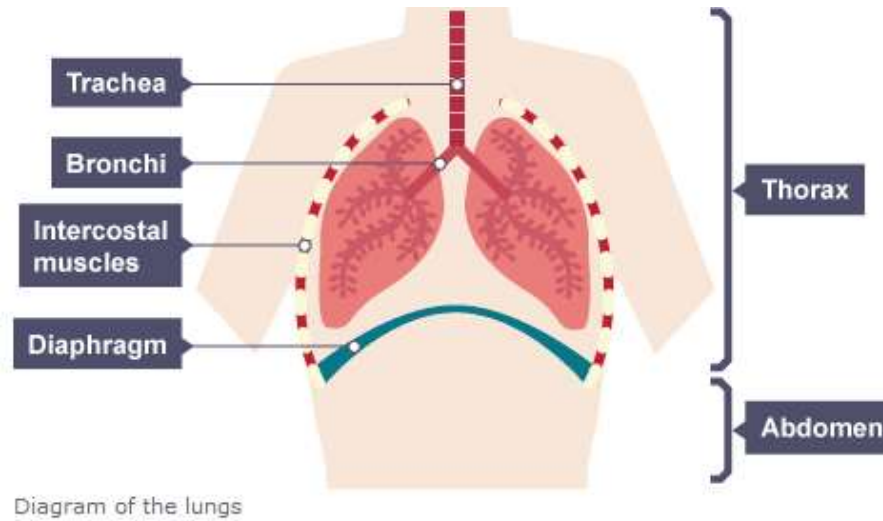
Cardiac failure and LVAD function



<https://www.youtube.com/watch?v=mOZlYoq32SQ>

Lungs alveoli and breathing physiology

http://www.bbc.co.uk/schools/gcsebitesize/science/triple_aqa/movement_of_molecules/gaseous_exchange_lungs/revision/1/



COPD and ECMO

<https://www.blf.org.uk/support-for-you/copd/what-is-it>

https://en.wikipedia.org/wiki/Extracorporeal_membrane_oxygenation

Kidney physiology, function and dialysis

http://www.innerbody.com/image_urinov/dige05-new.html

https://en.wikipedia.org/wiki/Renal_physiology#Mechanisms



<https://www.youtube.com/watch?v=shFSW8VE3Gs>

Further reading

- Holzapfel2009 and Sommer2015 → Myocardial mechanics
- Pedrizetti2015 → Intraventricular Flow Structures